JMMC tools

J. Kluska on behalf of the JMMC

JMMC

- Jean-Marie Mariotti Centre
  - Network of French laboratories: Grenoble, Nice, Paris and Lyon.
- Tools for optical interferometry:
  - Preparing observations
  - Processing data (reduction, visualisation)
  - Analysing data (model fitting, imaging)
  - Databases (OiDB, JMDC, JSDC, BadCal)
  - Models for interferometry (AMHRA)

Through the full observational data lifetime circle

Prepare Observations

SearchCal

ASPRO

Reduce data

amdlib

pndrs

View Data

OIExplorer

Fit Models

LITPro

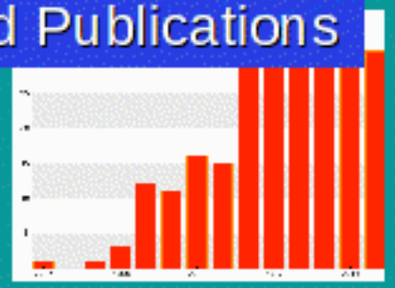
CDS Catalogs

SAMP

+ Training

+ User Support

+ OLBIN forum And Publications



JSDC

JMDC

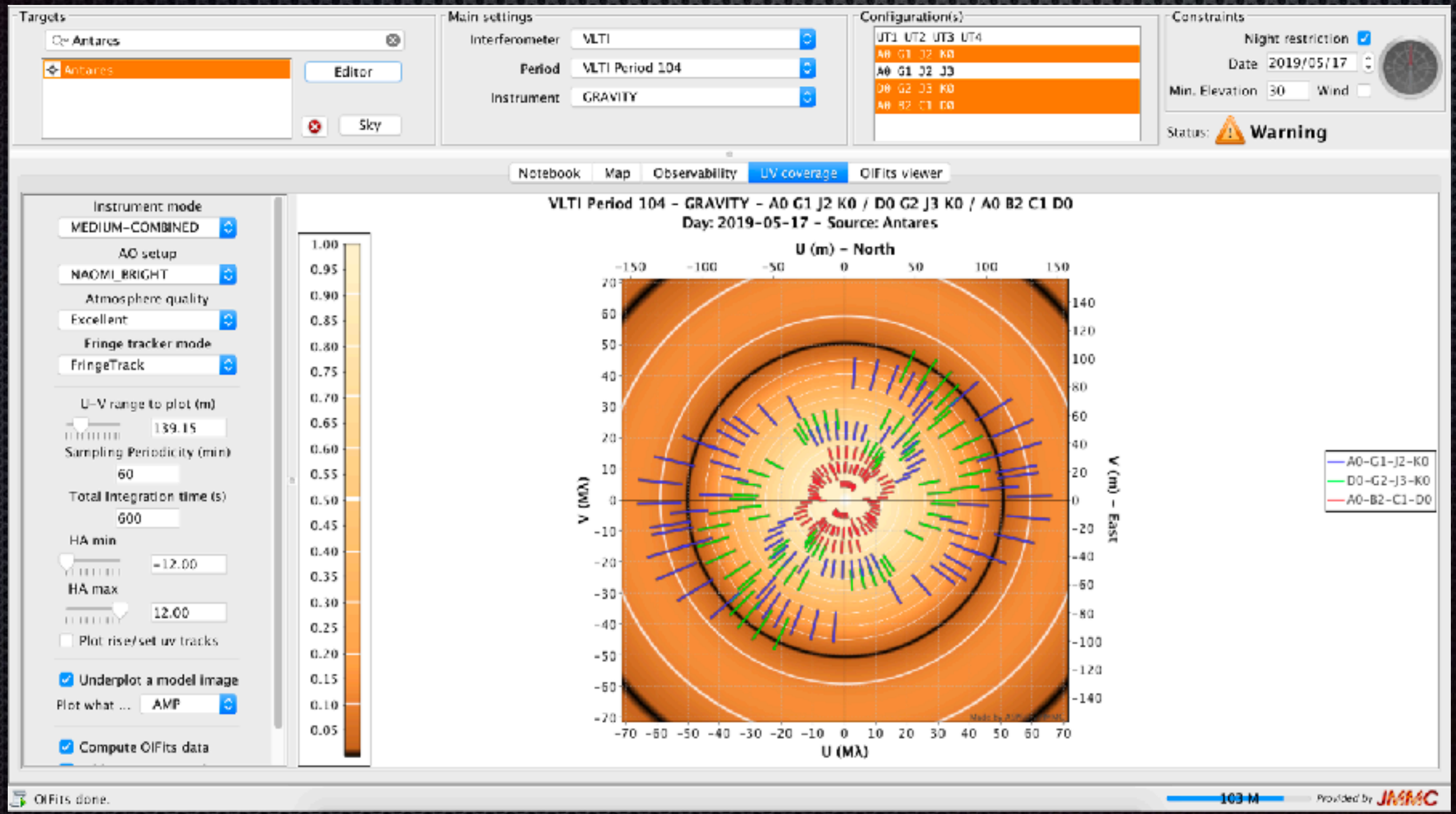
OiDB

L0 to L3 DataBases

Reconstruct Images

OImaging

ASPRO2: Preparing time proposals or observations



ASPRO2: Preparing time proposals or observations

Select an observatory and instrument

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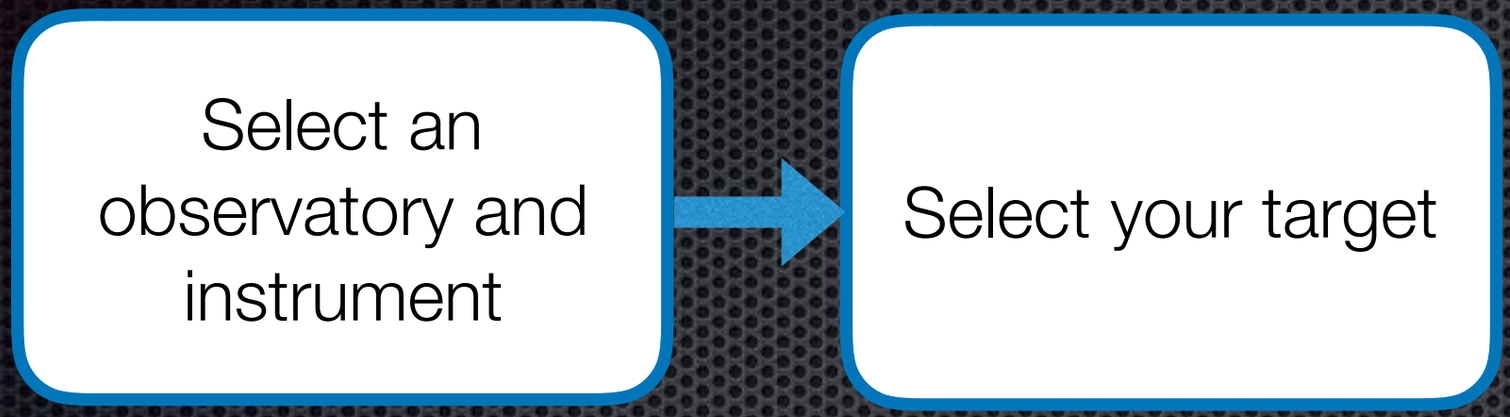


ASPRO2: Preparing time proposals or observations

ASPRO2: Preparing time proposals or observations

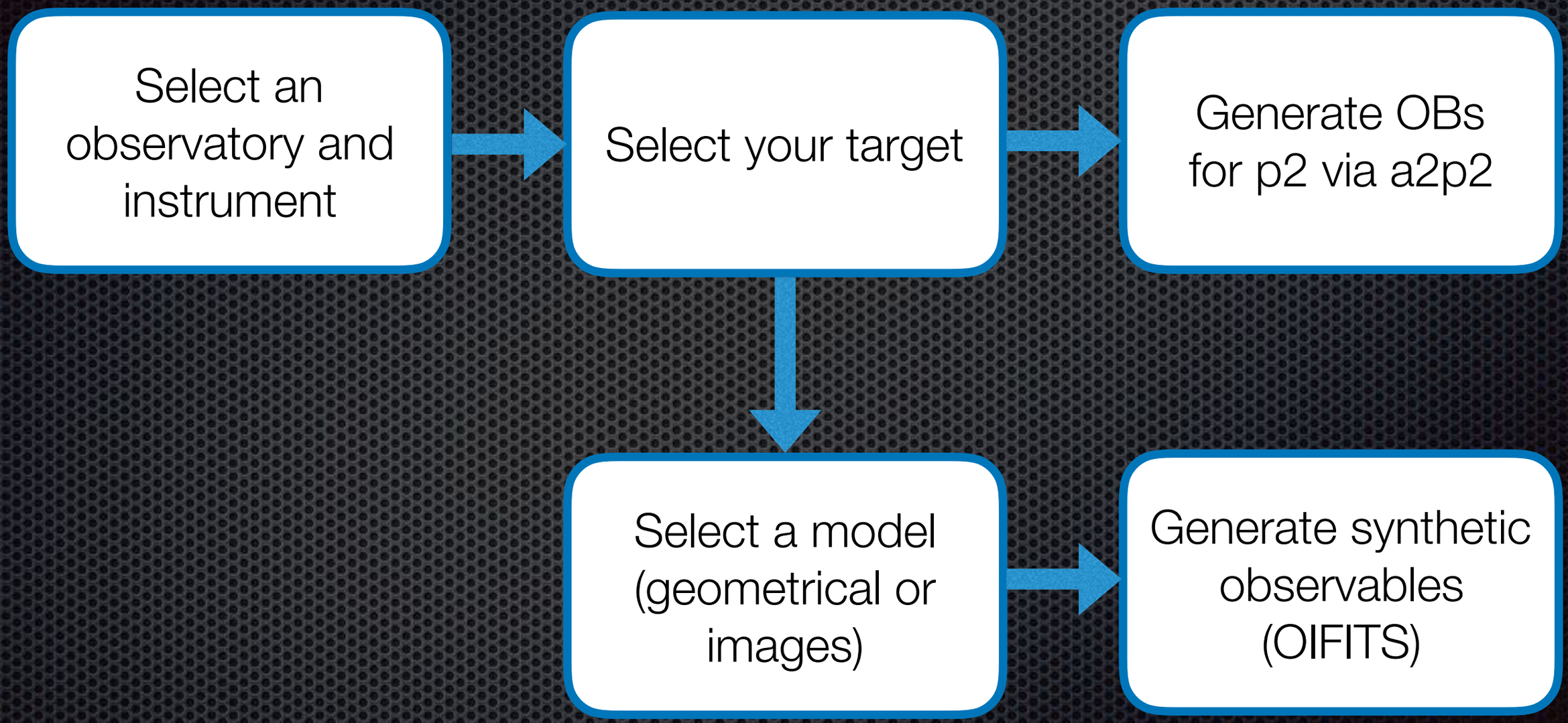
Select an observatory and instrument

Select your target

Generate OBs for p2 via a2p2

Select a model (geometrical or images)

ASPRO2: Preparing time proposals or observations



ASPRO2: Preparing time proposals or observations

Select an observatory and instrument

Select your target

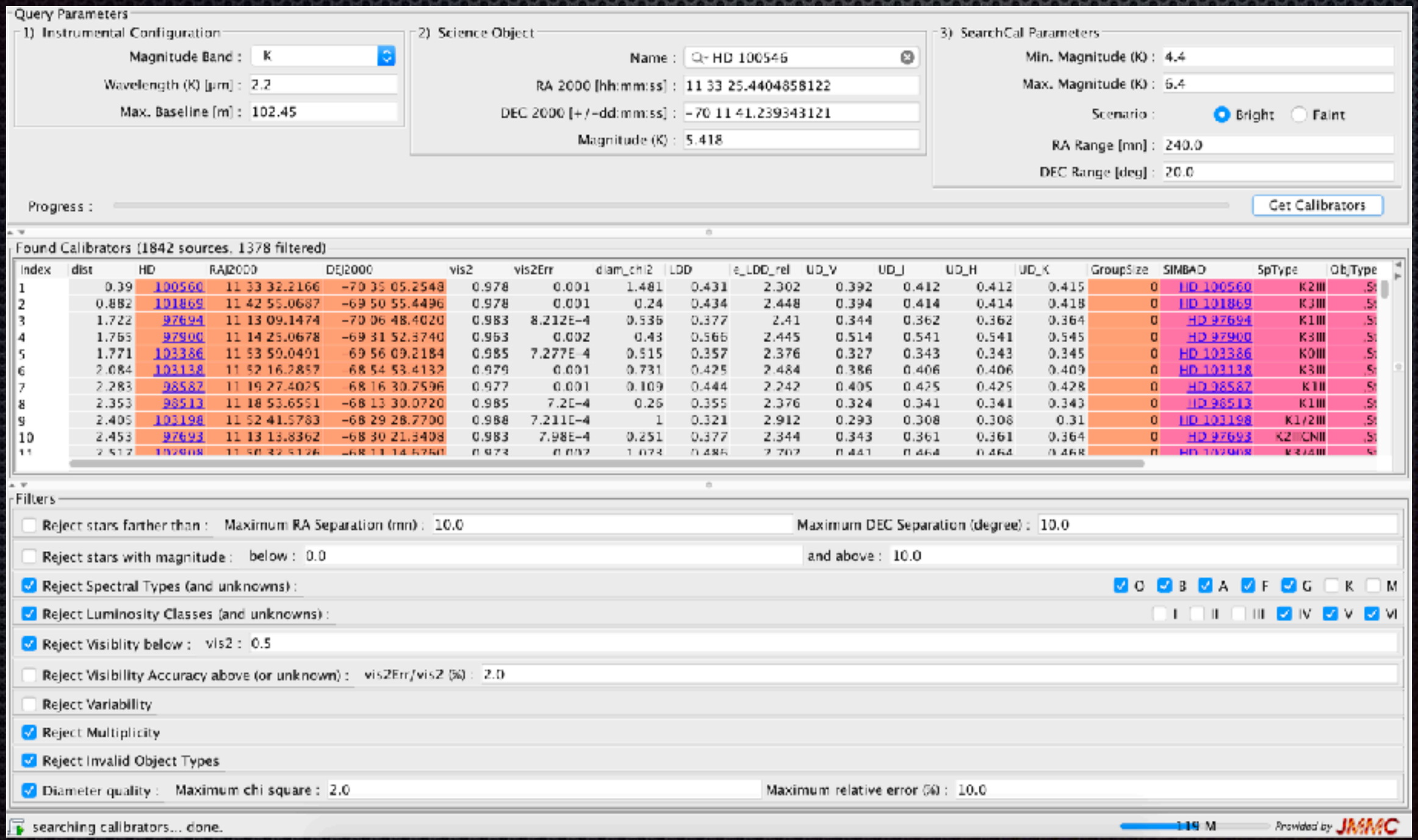
Generate OBs for p2 via a2p2

Demo!

Select a model (geometrical or images)

Generate synthetic observables (OIFITS)

SearchCal: Finding optimal calibrators



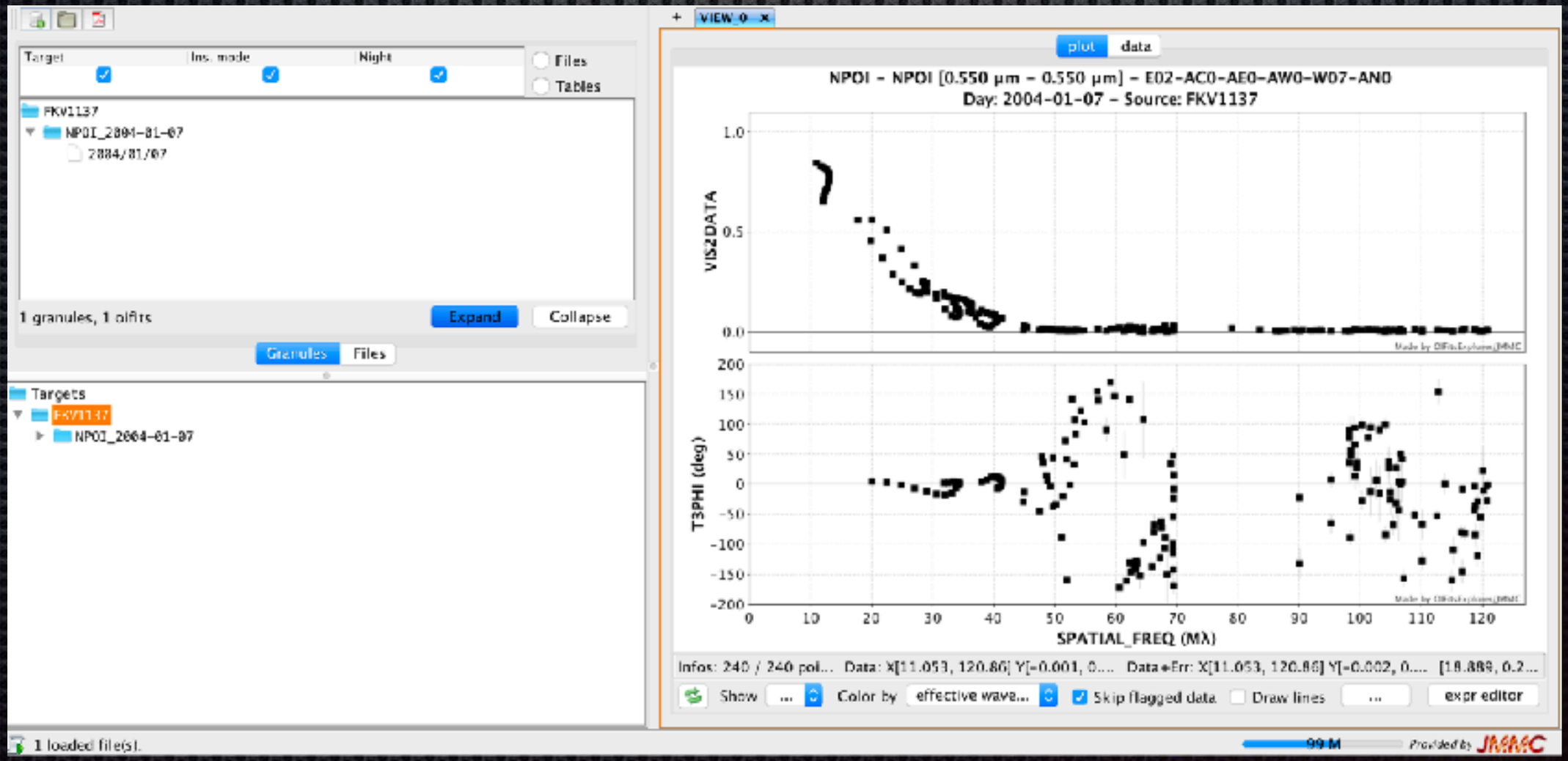
Index	dist	HD	RAJ2000	DEJ2000	vis2	vis2Err	diam_chi2	LDD	e_LDD_rel	UD_V	UD_J	UD_H	UD_K	GroupSize	SIMBAD	SpType	Obj.Type
1	0.39	100560	11 33 32.2166	-70 35 05.2548	0.978	0.001	1.481	0.431	2.302	0.392	0.412	0.412	0.415	0	HD 100560	K2III	.S
2	0.882	101869	11 42 55.0687	-69 50 55.4496	0.978	0.001	0.24	0.434	2.448	0.394	0.414	0.414	0.418	0	HD 101869	K3III	.S
3	1.722	97694	11 13 09.1474	-70 06 48.4020	0.983	8.212E-4	0.536	0.377	2.41	0.344	0.362	0.362	0.364	0	HD 97694	K1III	.S
4	1.765	97900	11 14 25.0678	-69 31 52.3740	0.963	0.002	0.43	0.566	2.445	0.514	0.541	0.541	0.545	0	HD 97900	K3III	.S
5	1.771	103386	11 53 50.0491	-69 56 09.2184	0.985	7.277E-4	0.515	0.357	2.376	0.327	0.343	0.343	0.345	0	HD 103386	K0III	.S
6	2.084	103138	11 52 16.2857	-68 54 53.4132	0.979	0.001	0.731	0.425	2.484	0.386	0.406	0.406	0.409	0	HD 103138	K3III	.S
7	2.283	98587	11 19 27.4025	-68 16 30.7596	0.977	0.001	0.109	0.444	2.242	0.405	0.425	0.425	0.428	0	HD 98587	K1II	.S
8	2.353	98513	11 18 53.6551	-68 13 30.0720	0.985	7.2E-4	0.26	0.355	2.376	0.324	0.341	0.341	0.343	0	HD 98513	K1III	.S
9	2.405	103198	11 52 41.5783	-68 29 28.7700	0.988	7.211E-4	1	0.321	2.912	0.293	0.308	0.308	0.31	0	HD 103198	K1/2III	.S
10	2.453	97693	11 13 13.8362	-68 30 21.3408	0.983	7.98E-4	0.251	0.377	2.344	0.343	0.361	0.361	0.364	0	HD 97693	K2 [CN]II	.S
11	2.512	102808	11 50 32.5126	-68 13 14.5750	0.973	0.002	1.073	0.486	2.702	0.441	0.464	0.464	0.468	0	HD 102808	K3/4III	.S

SearchCal: Finding optimal calibrators

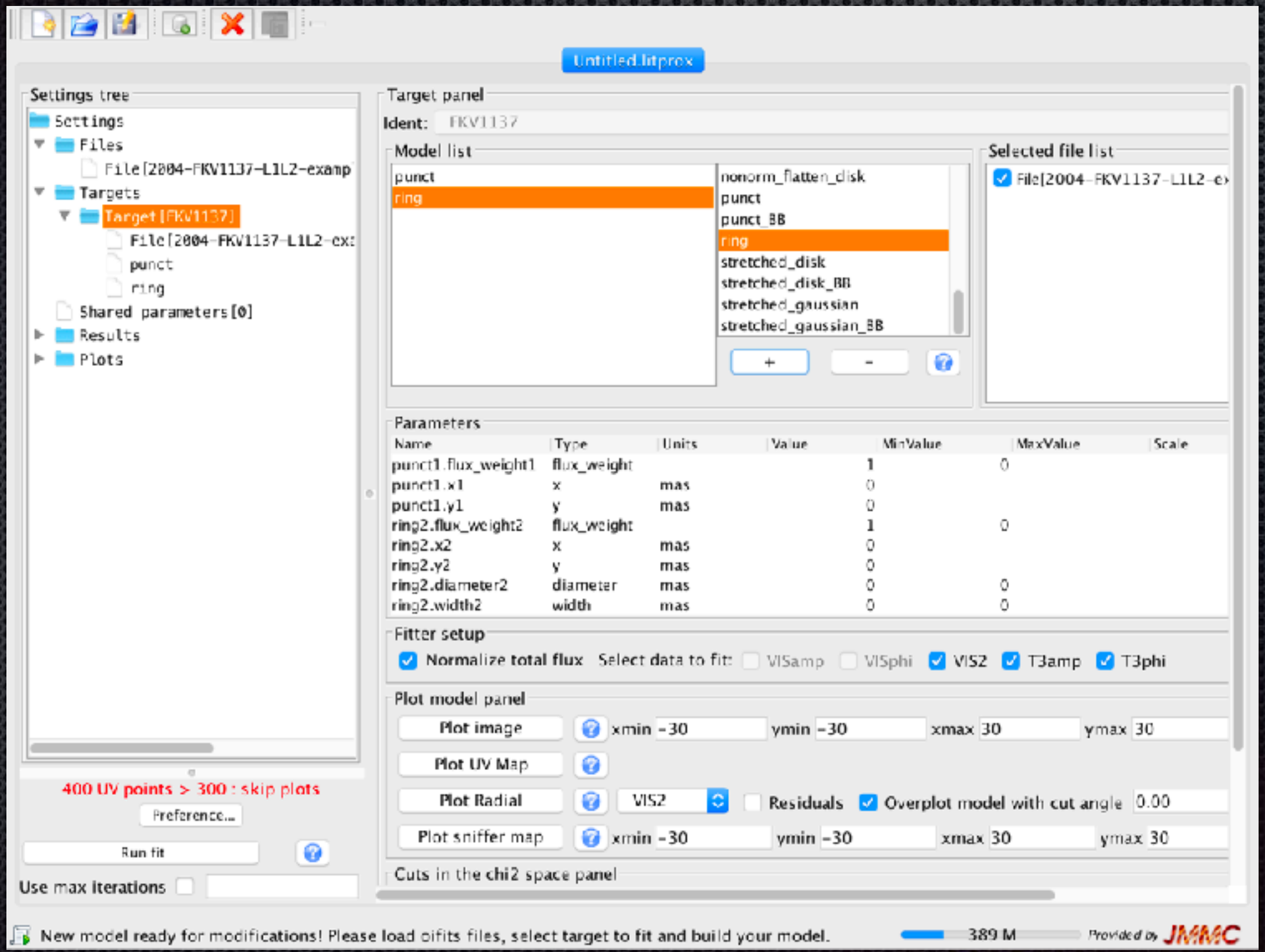
- Finding the closest calibrators (using JMDC and JSDC catalogs)
- Research criteria include:
  - Magnitude
  - Spectral type
  - Diameter (size, precision)
  - Variability and multiplicity rejection

OiFitsExplorer: Visualising your data

- User-friendly interface to visualise your interferometric data



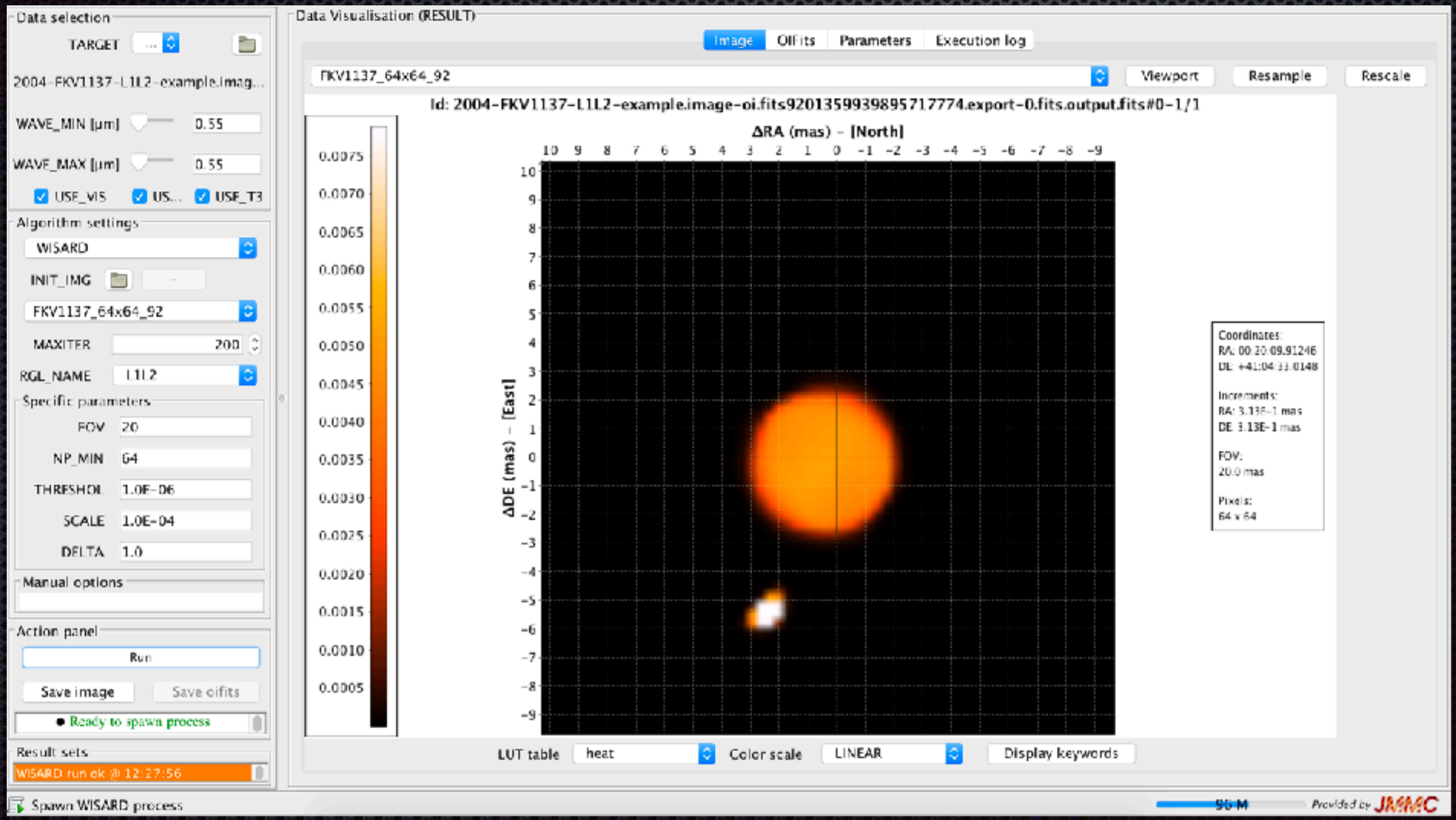
LitPro: Fitting your data



LitPro: Fitting your data

- Set of geometric models
- MCMC fitting algorithm
- Include several models:
  - Point source(s)
  - Disks (uniform, limb darkening)
  - Rings

OImaging: Image reconstruction



OImaging: Image reconstruction

- An user-friendly interface for image reconstruction
- Beta version, released this winter.
- Includes different algorithms:
  - BSMEM
  - MiRA
  - WIZARD

Models for interferometry - AMHRA

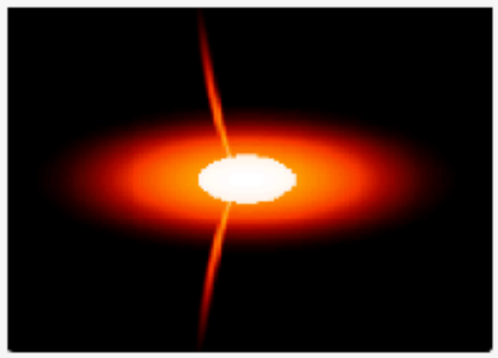
The different types of tools offered or to be offered by AMHRA are:

- Polychromatic images from astrophysical models with fast-computation time (real-time models)
- Polychromatic images from a pre-calculated grid of astrophysical models
- Spectro-interferometric observables from model images (OIFITSModeler)
- Analysis and model-fitting tools for spectro-interferometry

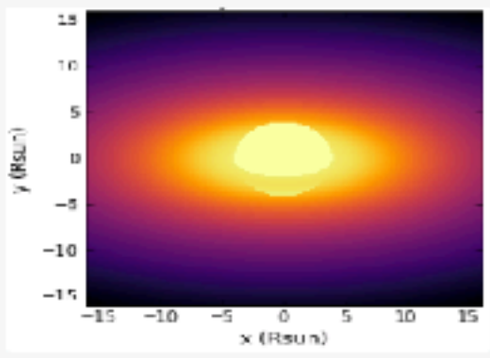
Photo credit : European Southern Observatory

Real Time astrophysical models

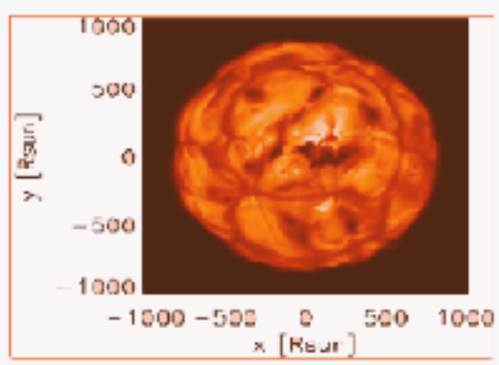
Kinetic Be Disk



Disc and Stellar Continuum (DISCO)



Evolved stars(RSG,AGB) with CO5BOLD



JMMC databases

- OiDB: Base de données interférométriques
- JMDC: JMMC Measured Diameter Catalog
- JSDC: JMMC Stellar Diameter Catalog
- BadCal: Bad Calibrator Catalog

Try it at home!

- Visit the JMMC website:
  - www.jmmc.fr / jmmc-new.osug.fr
- The interferometric database is on oidb.jmmc.fr
- Give feedback, report errors and suggest ideas for improvement!
- Please acknowledge the use of JMMC tools in your papers :)

Demo

- ASPRO2 + SearchCal
- LITPro
- OImaging
- Oidb